

REMARKS

I. General:

Claims 1-12, 25, and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 369,392 to Bungarz (hereinafter referred to as “Bungarz”) in view of U.S. Patent No. 3,247,877 to Evans (hereinafter referred to as “Evans”). For the reasons that follow, Applicants respectfully request reconsideration and allowance of claims 1-12, 25, and 26.

Claims 13-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bungarz in view of Evans and further in view of U.S. Patent No. 4,341,497 to Downey (hereinafter referred to as “Downey”). For the reasons that follow, Applicants respectfully request reconsideration and allowance of claims 13-15.

Claims 16-18 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bungarz in view of Evans and further in view of U.S. Patent No. 6,155,761 to Donovan (hereinafter referred to as “Donovan”). For the reasons that follow, Applicants respectfully request reconsideration and allowance of claims 16-18 and 20.

Claims 19-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bungarz in view of Evans and further in view of U.S. Patent No. 6,062,786 to Garver (hereinafter referred to as “Garver”). For the reasons that follow, Applicants respectfully request reconsideration and allowance of claims 19-24.

II. The 35 U.S.C. § 103(a) rejection of claims 1-12, 25, and 26 over Bungarz in view of Evans should be withdrawn.

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” M.P.E.P. § 2143.03. “It is essential that office personnel find some motivation or suggestion to make the claimed invention in light of the prior art teachings.” M.P.E.P. § 2144.08, Part II.A. A rejection based on a prima facie case of obviousness is improper if the combination of the references teach every element of the claimed invention, but fail to teach a motivation to combine. M.P.E.P. § 2143.01 (citing In re Rouffet, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998)).

If the “proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” M.P.E.P. § 2143.01. Similarly, “[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art

invention being modified, then the teaching of the references are not sufficient to render the claims prima facie obvious.” M.P.E.P. § 2143.01. When evaluating whether one or more prior art references suggests or teaches all the claim limitations, each prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. M.P.E.P. § 2141.02.

According to the Examiner, at the time the invention was made, it would have been obvious for one of ordinary skill in the art to form the thread of Bungarz as disclosed in Evans so that the threads would lock the nut in the tightened position and prevent it from backing off and possible failure of the U-bolt. For at least the reasons that follow, Applicants respectfully contend that Evans and Bungarz fail to teach a motivation to combine the staple of Evans with the lobal thread of Evans.

Evans teaches that a problem in the area of locking screws is the necessity “in practice to maintain a very close control on the minor diameter of the tapped hole in order to keep the assembly drag torque low and within a narrow range.” Evans, Col. 1, ll. 19-29. Evans also teaches that these close tolerance requirements have been the main barrier to more widespread use of the inventor’s previous patent. Evans, Col. 1, ll. 19-29. Accordingly, the object of Evans is to provide better piloting and reduced torque when a “self-locking internal cold thread forming fastener” is rotated into a “drilled hole.” Evans, Col. 1, ll. 30-70. In furtherance of these objectives, Evans utilizes a screw 10 that is provided with a plurality of specially shaped lobes. In particular, Evans teaches “[t]hree or more lobes are preferred for better piloting when screwing into a drilled hole.” See Evans, Col. 2, ll. 52-59. However, Evans does not supply the requisite motivation to combine such features with the staple of Bungarz, since there is no indication in Bungarz that i) the staple of Bungarz can be rotated or that it is designed for internal cold thread forming or ii) that piloting and excess torque are a problem with staples.

Bungarz teaches “in the use of a certain class of staples which are subjected, to heavy strains and considerable abrasion, such as whiffletree-staples, much inconvenience is often incurred by the breaking of the loop or part of the staple at which all the wear occurs.” Bungarz, Col. 1, ll. 8-13. Accordingly, the object of Bungarz is to provide a “simple and cheap means for protecting the parts of the staples subjected to abrasive strains.” Bungarz, Col. 1, ll. 14-16. In furtherance of these objectives, Bungarz utilizes a “detachable shield-piece” that is “adapted to be placed over the limbs of the staple and its upper part formed to

cover the inside of the loop.” Bungarz, Col. 1, ll. 17-21. The teaching of Bungarz clearly conveys to one of ordinary skill in the art that the problem with the staples disclosed therein is not backing off of the “nuts b b” or the resulting failure or dislocation of the staple. In contrast, Bungarz teaches that the nuts secured the staple to the whiffletree for such a long duration that the staple wears away and the “breaking of the loop occurs” before the nuts back-off. Clearly, Bungarz does not supply the requisite motivation to combine the staple with the lobed thread of Evans, since; there is not indication in Evans that the lobed thread would reduce the wear on the staple. Accordingly, Applicants respectfully request reconsideration and allowance of claims 1-12.

III. The 35 U.S.C. § 103(a) rejections of i) claims 13-15 over Bungarz in view of Evans and Downey, ii) claims 16-18 and 20 over Bungarz in view of Evans and Donovan, and iii) claims 19-24 over Bungarz in view of Evans and Garver should be withdrawn.

With respect to claims 13-15, 16-18, and 19-24, the Examiner asserts that it is obvious to modify the combination of Bungarz and Evans with the “Vee shaped thread” of Downey, the “curved shaped thread” of Donovan, and the “curved thread surface with curved flanks and a plateau surface including plateaus that would form a frusto-conical shape” of Garver. According to the Examiner, such a modification would “provide a lead in for the nut,” which “would insure proper threading prior to the re-form threads so the re-form threads would operate as intended. For the reasons that follow, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejections of claims 13-15, 16-18, and 19-24.

The threads from Downey, Donovan, and Garver that the Examiner seeks to combine with Evans and Bungarz do not displace material as shown in FIG. 2 of Evans. This is contrary to the purpose of the initial threads of Evans. Evans provides a trilobular shape along its entire length. Evans, Col. 2, ll. 31-35. As stated in Evans, the leading ends 32 and 40 of the crest and root of the screw thread are for the purpose of “the displacement of material.” Evans, Col. 3, ll. 26-29. Consequently, one skilled in the art would not change the material displacing properties of the initial threads of Evans by providing the threads of Downey, Donovan, and Garver, which fail to displace material. Accordingly, for at least this reason, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejections of claims 13-15, 16-18, and 19-24.

In response to the Examiner's contention that "when considering the preferred embodiment of Evans, where it is screwed into an internally threaded member as discussed above, there is no requirement that the lead screw threads displace material," Applicants first point out that Evans clearly teaches that an important aspect of all the embodiments disclosed therein is the ability to displace material. In particular, in the embodiment disclosed on Col. 2, ln. 28 through Col. 4, ln. 51, "the leading ends 32 and 40 of the crest and root of the screw thread have a very gentle radially inward taper facilitating the entry of the screw into the drilled hole and the displacement of material." and "there is sufficient void space at the bottom of the root, FIGURE 4, together with the void space between the lobes to accommodate the flow of displaced material." Evans, Col. 3, ll. 26-29 and Col. 4, ll. 18-21. Furthermore, in the embodiment disclosed on Col. 4, ln. 51 through Col. 6, ln. 4, there are "voids, particularly the void along the right flange" that "will accommodate displaced material." Evans, Col. 5, ll. 40-45. Consequently, even where the device of Evans is screwed into an internally threaded member, it is an important object of Evans that the lead screw threads displace material. Accordingly, for at least this reason, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejections of claims 13-15, 16-18, and 19-24.

Furthermore, contrary to the Examiner's assertion, Applicants respectfully contend that an important aspect of Evans is that all the embodiments disclosed therein are at least capable of self-tapping. Accordingly, the Examiner's modification would clearly render Evans device unsatisfactory for its intended purpose and change its principle of operation. At the outset of the disclosure, Evans clearly teaches that it is an object of the invention (not just certain embodiments) disclosed therein "to provide a fastener which may be used as a ... self-tapping ... fastener" Evans, Col. 1, ll. 55-57. Moreover, this contention is further supported by the subsequent disclosure of Evans. In particular, in the embodiment disclosed on Col. 2, ln. 28 through Col. 4, ln. 56, Evans teaches that the "screw 10 is designed to be a self-tapping screw" although it is also capable of being "screwed into a pre-tapped hole." Evans, Col. 3, ln. 20 and Col. 4, ln. 10. Additionally, in the embodiment disclosed on Col. 4, ll. 10-56, Evans teaches that the "the fastener 50 ... may be used as a self-tapping fastener." Evans Col. 4, ll. 58-60. Consequently, the Examiner's proposed modification would render the device of Evans unsatisfactory for its intended purpose and change its principle of operation. Accordingly, for at least this reason, Applicants

respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejections of claims 13-15, 16-18, and 19-24.

IV. Conclusion

Applicants assert that the subject matter of the present application is novel, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully Submitted,

By: 

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